

REMARKS

Claims 1-19 are now in the application. By this Amendment, claim 1 has been amended to provide proper antecedent basis for the claim features “propylene polymers” but not to limit the scope of this claim. Claims 16-19 have been added. Support for claims 16-18 is found at least at page 4, lines 12-24, and support for claim 19 is found at least at page 3, lines 7-19, of the specification. No new matter has been added.

Claims 2 and 3 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for reciting “polymer” instead of “polymers.” Claim 1, from which these claims depend, has been amended to obviate this rejection.

Claim 3 is further rejected because the Office Action asserts that it is unclear if the high-temperature peak in the DSC thermodiagram is attributable to the claimed polypropylene polymer or another species present. Applicants respectfully submit that this claim feature is a property of the claimed open-celled foam beads, as described at page 4, lines 12-24, of the specification. The double peak in the DSC thermodiagram is also described at page 1, lines 14 to 20, of the specification and is explained in more detail in the related art citation EP-A 415 744 on page 5. Specifically, the high-temperature peak is attributed to secondary crystals in the expanded particles. Thus, claim 3 recites a physical property of the claimed open-celled foam particles.

Claims 1-5 have been rejected under 35 U.S.C. §103(a) as being unpatentable over WO 97/38048 to Kaneka Corp. as evidenced by US 6,596,782 to Mogami et al. (hereinafter “Mogami”).

Independent claim 1 recites, among other features, open-celled foam beads having a proportion of open cells of greater than 40%. As appreciated by the Examiner, Mogami cannot reasonably be considered to suggest this feature of claim 1. However, the Office Action asserts that comparative example 7 of Mogami, suggesting a closed cell ratio of 63% corresponding to an open cell ratio of 37%, is sufficiently close to the claimed range.

Mogami suggests water-containing polyolefin resin compositions for use in the preparation of polyolefin resin pre-expanded particles. The particles have an apparent expansion ratio of 5 to 60 and a closed cell ratio of 80 to 100%.

The Office Action relies on a single value of a comparative example outside of the above-quoted range of claim 1 for a suggestion of this claimed range. Applicants respectfully submit that a skilled artisan would not consider the disclosure in Mogami to suggest any benefits of having an even lower percentage of closed cells because the Office Action is relying on a comparative example outside of the scope of inventive resins of Mogami. Moreover, Mogami teaches away from the claimed range because Mogami suggest, at col. 3, lines 48-55, that the invention provides polyolefin resin pre-expanded particles having a closed cell ratio of 80 to 100%. At col. 9, lines 22 – 26, Mogami suggests that if the closed cell ratio is less than 80%, the pre-expanded particles lack the secondary expanding force, thus fusing failure occurs upon molding to deteriorate the mechanical strength and the like of the resultant molded article.

The Office Action asserts, at page 4, lines 8-14, that the cushioning and flexibility properties of the molded articles obtained from beads in accordance with comparative example 7 would fall into the middle range, while maintaining all other properties at a high level. This assertion is incorrect. As set forth in Table 2 of Mogami, comparative example 7 was kept in a closed vessel at a pressure of 80 kg/cm²G, i.e., outside of the pressure range of 25 to 75 kg/cm²G recited in claim 1 of Mogami. At col. 10, lines 43-47, Mogami suggests that if the internal pressure exceeds 75 kg/cm²G, the cell diameter becomes too small and the closed cell ratio is lowered, thus deteriorating shrinking resistance, shape stability, mechanical strength and heat resistance of molded articles. Thus, Mogami suggests that comparative example 7 has substantially inferior properties than a resin comprising 80 to 100% closed cells. Accordingly, if anything, Mogami actually teaches away from the present invention.

Claim 3 is further rejected under 35 U.S.C. §103(a) as being unpatentable over WO 97/38048 to Kaneka Corp. in view of US 6,077,875 to Sasaki et al.

The Office Action relies on Sasaki for suggesting features corresponding to a DSC thermodiagram, having at least one high-temperature peak at a higher temperature than the melting peak of the propylene polymer employed. Sasaki is not applied in a manner to cure the deficiencies of Mogami discussed above. Further, Sasaki fails to suggest features corresponding to an open cell content of the expanded beads or to the use of any cell opener. Thus, a skilled artisan has no motivation to combine Mogami and Sasaki because Sasaki does not suggest any benefits for beads having less than 100% closed cells.

Claims 2-5 and 16-19 are in condition for allowance for at least their dependency on an allowable claim 1, as well as for the additional patentable subject matter that each of these claims recites. Further, Applicants respectfully request that claims 6-10 and 12-15 be rejoined upon allowance of claims 1-5 and 16-19.

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

Applicants concurrently herewith submit the requisite fee for a Petition for a one-month Extension of Time. Applicants believe no additional fee is due with this response. However, if any additional fee is due, please charge our Deposit Account No. 22-0185, under Order No. 12810-00007-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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